FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World.
Founder and Editor: STANLEY SPOONER
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CONTENTS

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

1922.

Aug. 6 .... Gordon-Bennett Balloon Race, Geneva
Aug. 6–20 French Gliding Competition at Clermont-Ferrand
Aug. 7 .... Aerial Derby Starting at Waddon
Aug. 12 .... Schneider Cup Seaplane Race, at Naples
Sept. 2–17.... International Concours Aviatique, Rotterdam
Sept. 9–10.... 1,000 Miles Race round Britain for the King's Trophy
Sept. .... Tyrrhenian Cup, Italy
Sept. .... Italian Grand Prix
Sept. or Oct. R.Ae.C. Race Meeting, at Waddon
Sept. 22 .... Coupe Deutsch (300 kil.)
Dec. 15–Jan. 2 Paris Aero Exhibition

1923.

Dec. 1 .... Entries Close for French Aero Engine Competition

1924.

Mar. 1 .... French Aero Engine Competition.
Mar. 15 .... Entries close for Dutch Height Indicator Competition

EDITORIAL COMMENT.

ELSEWHERE in this issue we publish a brief review of the Annual Report of the Aeronautical Research Committee, which has now taken the place of the old National Advisory Committee for Aeronautics. The Report gives an indication of the amount of work which has been done during the year with which it deals (1921–22), and although much has been accomplished, the Report clearly indicates that much yet remains to be done. In fact, the further we progress, the further we appear to discover we still have to go. There is no need here to deal with all the problems that are awaiting solution; suffice it to indicate a few of the more pressing.

Position of Research

From the point of view of civil aviation, there would appear to be two outstanding problems, which are vital to the progress and safety of flying. One is that of stability and control. Important as is the question of stability, it is perhaps less so than that of control, especially at low speeds and large angles of incidence, and more particularly lateral control. The longitudinal control of the majority of machines is already fairly satisfactory, but it is a well-known fact that when the critical angle of lift is approached, the *ailerons* become, as the pilots say, "sloppy." Closely connected with the problem is that of rudder control. It appears that what is required is ample rudder control at low speeds, to counteract the yawing moment caused by the *ailerons*, but the problem is very complicated.

The second vital problem to which reference has been made is that of the power plant and its installation. It is obvious that if, at one stroke, we could produce a power plant which was absolutely free from breakdown, and which was, moreover, more economical in fuel consumption than present engines, the majority of our troubles would be over. The question of research into the possibilities of using other types of engines, other fuels, fire-proof installation, etc., is therefore one of the utmost importance, and the Report indicates that work along these lines is being carried out.

From the foregoing it might be concluded that all was well with research, if two of the most pressing

problems are receiving attention. This is, however, far from being the case, and it is greatly to be feared that the importance of research is not fully realised in high places. The Committee evidently think that if the technical aspect of research leaves the authorities cold, the financial side may touch them. Thus on page 5 of the Report it is stated that "The whole of the work supervised by the Aeronautical Research Committtee costs about 1 per cent. of the vote for the R.A.F. and the Air Ministry. The money which would have come to this country had 'R. 38' been a success would have maintained the research of the Committee in full activity for a period of five years." And yet all work on airship research has been abandoned, although a very great deal could have been learned from a relatively few and inexpensive tests carried out with one of the existing ships. The regrettable accident to "R. 38" provides an instructive example of making insufficient use of the advice of research workers, and of how it is possible to be "penny wise and pound foolish." Although the crisis which threatened the Aerodynamics Department of the N.P.L. in September, 1921, has, apparently, been passed, there is still ample grounds for misgivings as to the future of research, and, as Professor Bairstow points out in a very well-reasoned letter to *The Times* of July 22, the explanation may possibly be found in the Report on the Air Conference, in which the Director of Research stated that the Directorate of Research was an engineering as well as a scientific organisation, and that probably as much as four-fifths of its work relates to experimentation with specific appliances, the balance being research, pure and applied. Space does not allow of referring to it in greater detail this week, but we hope to return to the subject in a subsequent issue of FLIGHT.

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Half-Yearly Report on Civil Aviation

For the first time the Half-Yearly Report on the Progress of Civil Aviation is issued by the Directorate of Civil Aviation, instead of by the Controller-General of Civil Aviation, following upon the resignation of General Sir F. Sykes and the appointment of General Sir Sefton Brancker to the post of Director of Civil Aviation. Apart from this alteration, the Report (some notes on which are published on p. 422) follows the practice of previous Reports. There is little in its pages which calls for comment, the progress of civil aviation having been fairly steady—*especially abroad.*

At home the number of continental flights has decreased from 644 during the corresponding period last year to 485 from October, 1921, to March, 1922, but the number of passengers carried has slightly increased, from 1,418 to 1,686. In the case of goods there has, however, been a decline from 38 tons to 17·6 tons, and it would appear that the French lines are getting the majority of the goods traffic.

The failure of the air mail is strikingly shown up in table E on page 17 of the Report. During the period October-March, 1920-21, the number of letters posted for transmission to Paris by air mail was 32,810, while during the corresponding period this year the number was only 12,900. This is, of course, mainly due to the unsatisfactory terminal arrangements, and to the fact that the London-Paris route does not lend itself to air mail services with any advantage over existing mail facilities. To be of any value the route should be very much longer.

International Air Congress, London, 1923

The announcement that an International Air Congress, on the lines of that held in Paris in November last year, is to be held in London in 1923 can hardly be received with other than satisfaction by all interested in the future of aviation. We have repeatedly urged, in these columns, the necessity for the closest co-operation between nations if aviation is to play the part of which it is capable in the communications of the world. Aviation, by its very nature, must be of an international character, and the first congress did a great deal of good in bringing together representatives of various nations to discuss problems affecting international air services and their organisations. We therefore welcome the decision to hold the second congress in London next year, probably, it is stated, during the last fortnight in June. The fact that the Duke of York has consented to become President of the General Council, and Lord Weir of Eastwood Vice-President, should at once assure the status of the Conference, and, as the list of names published elsewhere in this issue will show, a very strong organising committee has been got together, which should be a guarantee that the arrangements—which are to include visits to aircraft works and air stations and possibly the Air Pageant—are the best possible. If the organising committee carry out an energetic propaganda abroad the attendance should be both large and representative, and aviation in general cannot but benefit from such a congress.

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The Aerial Derby

As announced a few weeks back, the Aerial Derby is to be flown from Waddon aerodrome. We have repeatedly pointed out the unsuitability of the ground for this race, not only on account of the nature of the aerodrome, but also because there is always the possibility of the race being held up owing to the ordinary traffic of the aerodrome. Another point is that Waddon is difficult to get to by train, 'bus, or tram, unless special trains from Victoria and/or London Bridge are run for the occasion, in which case matters would be a little better. It appears, however, that the proprietors of the Hendon aerodrome had exaggerated ideas of its value, and, as a consequence, Hendon will not even be a turning point. We are sorry that the race is not to be held at the historical starting point, but the Royal Aero Club must necessarily have the commercial side in mind when making its choice under the present somewhat handicapped position.

As to the race, it is otherwise to be flown over much the same circuit as in previous years, but in the opposite direction—*i.e.*, clockwise. This alteration has, we believe, been made in order that spectators should not have to face the sun (if any) when watching the machines coming in.

At the moment of writing there are, sad to relate, only two definite entries, but there is little doubt that a good "field" will materialise at the last moment, as in previous years. The first closing date of entry was July 26, but by paying an extra entrance fee machines may be entered up to Monday, July 31. For some reason or other entries are always late, and so one need not dispair of having a good showing, at least as varied as last year's. In any case, the new Bristol will take some beating, and Mars I will once again challenge all newcomers. Possibly also one or two fast French machines may turn up, but at present all is uncertainty.

FLIGHT

THE MAYENBERGER SPORTING AMPHIBIAN

IN a recent issue of our South American contemporary *Aviacion* (Buenos Aires) there appeared a brief description of a small and somewhat novel amphibian "one-and-a-half-plane," the invention, it appears, of one Hermann Mayenberger. Unfortunately, details of the more interesting features are by no means complete, and the nationality of the machine is somewhat obscure. However, we give our readers what information is available, together with general arrangement drawings.

This machine has been designed with the object of fulfilling the requirements of the sportsman, the farmer, or commercial man who wishes to be independent of the railway or other means of communication. Simplicity of construction has been a main consideration, without, however, causing any sacrifice to aerodynamical requirements, strength, etc.

As may be seen from the accompanying drawings, the body consists of a short rectangular-section *fuselage*, tapering abruptly towards the rear, and very deep in front, where the lower portion is formed into a hydro plane or float. Projecting from the sides of the latter are two short stumps of wings which carry the main landing wheels. These, it would seem. are hinged at the top extremities of thin struts or forks so as to fold upwards, out of the water, beneath the main plane.

At the rear of the float, below the *fuselage*, is a third wheel, which is connected to the control operating the rudder, and thus serves to steer the machine when on the ground.

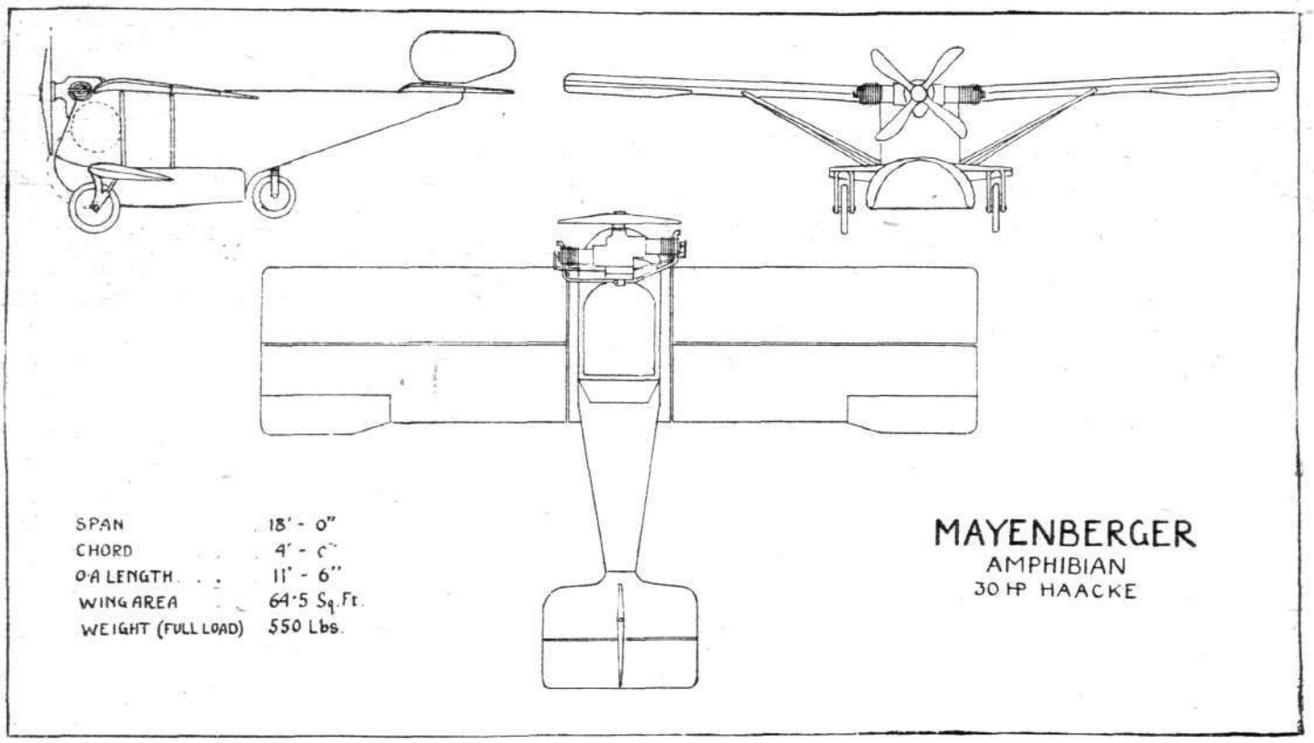
The main planes, which are set at a slight dihedral angle, are attached to short wing-roots mounted on the top *longerons* of the *fuselage*, and their incidence—5° flying horizontal—is such as to allow a low landing speed. It will be observed that each wing is divided into two sections, transversely, the object of which is, apparently, to allow the trailing portion to hinge down, when the front portion then folds back—thus occupying the minimum of space when folded.

They are braced by a pair of struts each side, extending from the bottom of the *fuselage* up to the wings. No other bracing, it is claimed, is necessary. As to how the folding of the wings, and raising wheels, is achieved is not stated, but the mechanism for folding the wings is contained within the latter.

The tail planes consist of a lifting stabilising surface—to the trailing edge of which is hinged a one-piece elevator—mounted on the top of the *fuselage*. Above, is an oval-shaped balanced rudder, but no vertical fin. The control of the machine is somewhat novel, and all controls are concentrated round the main control wheel—all, both for engine and machine, being operated by hand, and no pedals of foot bar are employed. It is claimed that the control of the machine is thus extremely simple. All control cables and rods are placed out of the way and within the *fuselage*. Unbalanced *ailerons* are mounted at the rear extremities of the main planes.

The pilot's cockpit is large and roomy, being situated in the deepest portion of the *fuselage*, in the centre of the wings. Immediately behind the pilot's cockpit is a compartment containing a parachute apparatus, consisting of two parachutes, superimposed, attached to the pilot's seat, and capable of supporting the weight of the machine, thus allowing it to glide safely to earth in case of emergency—at least, so it is claimed! The parachutes are released by means of an automatic button, situated on the control wheel, and are shot out of the compartment—whichever part of the machine they are stowed—by means of elastic, unfolding at the same moment.

The engine, a 2-cyl. 30 h.p. Haake, is mounted in the nose of the *fuselage*, and drives a four-bladed tractor screw, 3 ft. diameter, covered with a thin covering of metal for protection against water, spray, etc.



THE MAYENBERGER SPORTING AMPHIBIAN: General arrangement drawings.

It is claimed that this little amphibian can, when its wings have been folded back, be driven along ordinary roads—like an automobile—with ease and safety. This appears to be a reasonable claim, inasmuch as the third wheel, at the rear, being connected to the rudder control, should render steering an easy matter, whilst the small diameter of the tractor screw allows the latter to be employed as a means of propulsion with comparative safety. It is also stated that the machine can be stored in any ordinary garage, etc., owing to its small overall dimensions with the wings folded.

The principal characteristics of this machine are:—

Span	18 ft. 0 ins.
Chord	4 ft. 0 ins.
Overall length	11 ft. 6 ins.
Overall height (over tractor screw)	5 ft. 0 ins.
Area of wings	64·5 sq. ft.
Weight of machine empty	297 lbs.
Weight of machine with full load	550 lbs.
Weight/h.p.	18·3
Weight/sq. ft.	8·5
Maximum speed	93 m.p.h.
Cruising speed	74 m.p.h.
Range	370 miles
Ceiling	12,800 ft.
Engine	30 h.p. Haake.

PROGRESS OF CIVIL AVIATION

Half-Yearly Report

A HALF-YEARLY REPORT on the progress of civil aviation—the sixth of the series—covering the winter period from October 1, 1921, to March 31, 1922, has been issued by the Air Ministry as a White Paper. As before, the report is divided into two parts, the first containing information regarding Civil Aviation in Great Britain and the Empire, the second dealing with Progress in Foreign Countries.

In accordance with the announcement made at the Air Conference held in February, 1922, a permanent Civil Aviation Advisory Board, to take the place of the Advisory Committee on Civil Aviation, of which Lord Weir was Chairman, has been established under the Chairmanship of the Under-Secretary of State for Air "to advise generally on the development of Civil Aviation and to report upon any specific point which may from time to time be referred to the Board by the Secretary of State for Air." In addition to the Director-General of Supply and Research and the Director of Civil Aviation, representatives to serve on this Board have been nominated by the General Post Office, Royal Aeronautical Society, Air League of the British Empire, Royal Aero Club, Society of British Aircraft Constructors, Lloyd's, Association of the British Chambers of Commerce, Federation of British Industries, Accident Offices Association, and the Institute of Transport.

At the present stage of civil air development the tables appended to Part I, dealing with civil flying and accidents, have considerable value as showing that in spite of difficulties there is no actual decline in the use of air transport, but that on the contrary a steady rate of increase has been maintained and that the efficiency of the British Continental services has improved.

Taking the passenger traffic to and from the Continent, it is shown that during the six winter months, October, 1921, to March, 1922, the total of passengers arriving and departing on British machines was 1,686 as compared with 1,418 during the same period in 1920–21 and 796 in 1919–20.

That the British companies have had the major share in the total traffic is also plain, since the arrivals and departures on machines of all nationalities flying on all cross-Channel routes during these three half-yearly periods were 2,511, 2,023 and 887 respectively.

The report states that a considerable increase in traffic is essential if the air transport firms are to obtain a commercial basis of operation, but points out that the traffic figures for the first quarter of this year are, at least, encouraging. During these three months, the total number of passengers carried by both British and foreign companies between London and the Continent, was 981; 676 of these were carried by British firms. The British position has, therefore, been improved as compared with the same period last year when the total number was 670, of which 240 only travelled by British lines.

Imports and exports of goods by air did not maintain in the 1921–22 winter period the high level attained in 1920–21, but this may possibly be due to general trade depression.

Between August, 1919, and March, 1922, the total value of imports by air amounted to £1,157,556, and of exports £605,759, a grand total of £1,763,315.

The report draws special attention to the increase in efficiency of the British Continental air services duing the winter months as compared with former years; during the three months, December, January and February, the average efficiency of the services was 79.4 per cent. as compared with 66.2 per cent. for the corresponding months in 1920–21. For the whole year 1920, the efficiency of operation was 80.2 per cent., and only in four months was this figure exceeded. For 1921, the figure rose to 89.2 per cent., and only in four months did the efficiency fall below 90 per cent. The 90 per cent. efficiency rate was not reached in any month in 1920.

It is satisfactory to note that for the first time there has been no fatal accident during a half-yearly period.

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British Airway Efficiency

THE official returns show that the flight efficiency figures for the three British companies on the London–Paris route for June, flying having taken place on each day of the month, are as follows:—

Handley Page Transport, Limited, made seventy flights, of which sixty-nine were completed within the required period of four hours, the efficiency being 98.6 per cent.

Daimler Hire, Limited, carried out eighty-five flights, of which eighty-two were made within the required time, showing an efficiency of 96.5 per cent.

International Air Convention.—An amended form of the proposed declaration relating to Article 5 of the Convention was prepared by Great Britain, and it was hoped that agreement to this formula would enable ratifications of the Convention to be deposited. (The Convention was actually ratified on June 1, becoming operative in the countries which ratified 40 days after that date, and the first meeting of the International Air Commission was held at Paris, July 11, 1922).

The temporary agreement between Great Britain and France has been amended with respect to the corridors of entry for aircraft. The French corridor now extends from Etaples to the Belgian frontier, while the British corridors have been abolished.

Communications (Signals and Navigation).—At the suggestion of the Handley Page Co., a system has been introduced at Croydom aerodrome for locating aircraft by sound and informing pilots of their position in relation to the aerodrome when arriving in bad weather. This system is effective within a radius of about 10 miles from the aerodrome. The officer in charge of the control tower at Croydon determines the direction of the aircraft by means of a sound locator, and informs the pilot by wireless telephony in which sector of a circle surrounding the aerodrome he is flying.

Regulations are to be introduced for the compulsory carriage of wireless by British passenger and goods aircraft. Meanwhile, all British aircraft (with the exception of two small machines) operating on the air routes between England and the Continent under the subsidy scheme are already equipped with wireless telephonic apparatus. The French Air Transport companies have agreed that all their larger passenger-carrying aircraft on the London-Paris service shall be so equipped by the middle of August this year, and the Dutch authorities are making similar arrangements.

Estimates.—The estimates for 1922–23 include £364,000 for Civil Aviation, and in addition £86,500 for the Headquarters Staff, of which £51,000 is for the Meteorological Office Staff. £200,000 of the vote for Civil Aviation is to be applied to the direct assistance of "approved" British firms operating cross-Channel air services; £79,000 is allotted for Meteorological services (excluding Headquarters Staff); £38,000 for the upkeep of aerodromes; £15,000 for expenditure on air routes, surveys, wages of W./T. personnel, etc.; £8,000 for technical equipment; and £61,000 for works and buildings at Croydon, Lympne, Malta and the Kidbrooke wireless station; and the illumination of air routes at home and in Egypt.

From the section of the report dealing with civil aviation in foreign countries we quote a few figures relating to France and Germany.

France.—The vote for Civil Aviation in 1922 amounts to 147,210,970 frs., including 45,382,000 frs. for air transport subsidies, an increase of approximately 14,000,000 frs. on 1921. In consequence of this increased assistance, air transport companies are extending and amplifying their services. The statistics of French civil aviation in 1921 show that approximately 1,460,000 miles were flown and 10,305 passengers were carried, in the course of 6,513 flights. A committee has been formed, called the Comité Française de Propagande Aéronautique, with the object of contributing in every possible way to the development of France's air power.

Germany.—At present there are in Germany five important air transport companies, and twelve mail air routes have been approved for regular operation by the Ministry of Transport. The amount of work carried out by German civil aircraft, flying on regular air lines, between April 1 and October 31, 1921, is shown by the following figures:—Number of passengers carried, 6,820; miles flown, 1,033,700; weight of mails carried, 67,600 lbs.; percentage of scheduled flight carried out, 90.8.

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The Instone Air Line made one hundred flights, of which ninety-six were completed within four hours, giving an efficiency of 96.0 per cent.

One French company carried out 111 flights, with an efficiency of 80.2 per cent., and the other companies forty-two flights, the efficiency being 76.2 per cent.

Avanti Savoia

DURING the last six months fifteen Savoia flying boats have flown 18,050 kms. (11,200 miles) over the Mediterranean without accident, most of the flights being made during the winter months.

FLIGHT

REPORT OF THE AERONAUTICAL RESEARCH COMMITTEE FOR THE YEAR 1921–22

THE Annual Report of the Aeronautical Research Committee for the year 1921–22 has just been published. As in previous years, the report gives a summary of the work of the past year, although it should not be confused with the technical reports known as Reports and Memoranda, which contain the technical details of the various experiments. The present report refers to the subjects that have been dealt with, but does not go into technical details.

The Committee pay a warm tribute to the work done by those who lost their lives in "R.38," notably Mr. Campbell, Mr. Pannell and Mr. Duffield, all of whom had been closely connected with the work of the committee, and it is pointed out in the report that experiments were planned which, had they been allowed to take place, would have rendered obvious the danger of fast flight at low altitudes in "R.38." But even without these experiments, it is stated, it would still have been an important safeguard had the committee been put in a position to study the drawings and calculations relating to the design, and it is pointed out that the investigations into the cause of the accident to "R.38" have shown how much may be lost by not realising at an early stage that the committee were in a position to give, and had published, advice, since proved to be useful and correct. The Committee, therefore, naturally regret the decision to abandon research with airships, and they have urged the importance of carrying out a quite limited scheme of research with one of the existing ships before she is completely dismantled or otherwise disposed of. In view of these facts, it is not without interest to note that the report states that "The whole of the work supervised by the Aeronautical Research Committee costs about 1 per cent. of the vote for the Royal Air Force and Air Ministry. The money which would have come to this country had "R.38" been a success would have maintained the research of the Committee in full activity for a period of five years. In another way, it may be stated that, should the work of the Committee lead to a reduction by one of the aeroplanes written off per year as a result of crashes, it would have earned the cost to the Air Ministry of the fees paid to its members."

The report further states that in September last they were asked to consider a serious curtailment of the activities of the Aerodynamics Department of the N.P.L., but, as a result of urgent representations, arrangements have since been made for the department to be maintained.

Aerodynamics

Turning now to the more technical aspects of the report, which are contained in a supplement, the report states that the Aerodynamics Sub-Committee has met nine times during the past year, and has dealt with a large number of papers on full scale, and on wind channel experiments. It is stated that a series of international trials on model wings and model airships have been initiated. The models have been carefully constructed to conform to the many methods of test used in the different laboratories, and it is hoped that the results, when finally collected together, will be of material assistance in co-ordinating all wind channel experimental work. At present, as is well known, there is considerable differences in the results obtained in the wind channels of the different countries, and the utilisation of results is thereby hampered.

Some time ago it was announced in this journal that in America work is progressing on the construction of a wind channel in which the air is compressed so as to obtain high values of VL. It is gratifying to find it stated in the report that a channel on somewhat similar lines is contemplated for the N.P.L., although it appears that at present it is only intended to try out the scheme in a 1-foot channel, which does not appear to us to be large enough for the purpose.

Regarding the question of stability and control, two wind channels at the N.P.L. are now devoted almost exclusively to work on these problems, and it is to be hoped that methods may be discovered for maintaining the lateral control of aeroplanes near the stalling angle. At present this is, perhaps, one of the most serious difficulties, as the majority of machines cannot be landed at their minimum speed, owing to the controls becoming "sloppy" just when they are most needed. From the report, it appears that experiments are being initiated with machines fitted with ordinary *ailerons*, with floating inter-plane *ailerons*, with large rudders, and with a special form of control which gives rise to a yawing moment of reverse sign to that given by ordinary *ailerons*.

On the subject of aeroplane wings a great deal of work has been carried out, and it is interesting to note that the vortex theory of Prandtl and others at the Göttingen laboratory has received considerable attention, and that an analysis has been made at the N.P.L. to establish the soundness, in so far as monoplane aerofoils are concerned, of the Prandtl aerofoil theory.

Apart from the problems of control at low speeds, perhaps the subject which interests practical designers most is that of scale effect. For certain fairly normal wing sections the scale effect is not serious, and generally the full-size wing gives greater lift and a better L/D than indicated by model experiments. When it comes to high-lift wings, however, appreciable doubt still appears to exist, and it is interesting to see it stated in the report that for such wings the maximum lift coefficient of the full wing may actually be smaller than that of the model. Not only so, but the gain in maximum lift coefficient obtained by using a high-lift wing may be only about one-half of that indicated by model experiments.

With reference to tail planes, the report states that recent experiments on an S.E.5A have shown that with this machine the loss in tail plane efficiency is caused: by wing interference, 5 per cent.; *fuselage*, 15 to 20 per cent.; and gap at the elevator hinge, 15 per cent. It would, therefore, appear that the effect of wing interference may be smaller than generally imagined, and that the shape of the *fuselage* and the gap between tail plane and elevator are of very considerable importance. Although it should be a relatively simple matter to remedy the latter, it would appear that it might be worth while to experiment with a slotted tail plane of the Handley Page type. If that should be found more effective than the ordinary tail plane and elevators it might be possible materially to reduce the size of tail which is now usually necessary.

Internal Combustion Engines

The report states that the Engine Sub-Committee have held seven meetings in the past year. Of the work undertaken, reference may be made to the research work on detonation, in regard to which continuous progress has been made at the N.P.L. with the programme initiated by Sir Dugald Clerk. A thorough investigation has been made into the effect of turbulence in producing detonation in hydrogen air mixtures, and the research is now being extended to other fuels, including various forms of liquid fuel. General research is being devoted to the use of a number of fuels under varying conditions. The Air Ministry, it is stated, have initiated a considerable programme, part of which will be carried out at the R.A.E., and part by Messrs. Ricardo, Ltd., The experiments will include an investigation into the possibility of obtaining higher economy, the use of fuels in supercharger units, and the possibility of using gases, other than hydrogen, to accelerate the rate of combustion. It is also hoped to carry out certain engine research work at Universities, and the report states that two Ricardo units for experiment are being supplied, one to Cambridge and one to the Armstrong College, Newcastle. The report further states that work is proceeding at the R.A.E. on a variety of engines, including the use of heavy oils in Diesel type engines, but that this is not regarded as hopeful on account of the inherent heavy weight of this type of engine.

The use of engines in which a stratified charge is employed, first suggested by Mr. Ricardo in a paper read before the Royal Aeronautical Society, and published in full in FLIGHT, gives promise of good fuel economy, and it is satisfactory to find that work on this problem is included in this year's programme. Owing to the great fuel economy which is rendered possible by the use of hydrogen added to ordinary fuel, it is regrettable to find it stated in the report that "owing to the discontinuance of the airship service it has been decided that, since the experiments have no immediate application to heavier-than-air craft, they should be discontinued." As stated in FLIGHT recently, these experiments are now being continued privately by Mr. Ricardo in connection with the Burney airship scheme.

The Fire Prevention Sub-Committee, which has met eleven times during the past year, has, it is stated, directed its attention almost entirely to the investigation of fires occurring on crash. It is concluded that the chief danger arises from the contact of inflammable materials with hot parts of the engine, and that the worst offender in this respect is the hot exhaust pipe. The report states that the most promising line of development appears to be the use of separate exhaust

pipes from each cylinder, the pipes to have in no part of their length sharp bends, and to be at a sufficiently low temperature before being led into a common manifold. The existing temperature of exhaust manifolds and pipes, which may vary from 550° C. to 650° C, should, the report points out, be reduced to a comparatively safe temperature of 350 to 380° C. Preliminary experiments suggest that if the radius of the exhaust pipes exceeds a certain figure—greater than 3 ins.—the temperature will be found to be lowered to near this safe limit.

In connection with this subject, experiments have been carried out at the R.A.E. on the ignition temperature of various materials when brought into contact with a hot exhaust pipe. It was found that petrol will not ignite on a hot exhaust pipe, but other materials, particularly lubricating oil, fabric, etc., are liable to catch fire at a comparatively low temperature.

In the case of multi-engined aeroplanes, the Sub-Committee are of the opinion that the petrol systems are very complicated, and are considering proposals for simplified systems. It was also noted that in almost all designs the electric cables and the petrol tubes were placed in close proximity to one another, which feature is considered undesirable.

The Report of the Aeronautical Research Committee for the year 1921–22 (T.1702 (revd.) D.2.Misc., 151) is published by His Majesty's Stationery Office, and may be purchased from H.M. Stationery Office, Imperial House, Kingsway, W.C. 2, the price being 2*s.* 6*d.* net.

THE ROYAL AERO CLUB OF THE U.K.

OFFICIAL NOTICES TO MEMBERS

AERIAL DERBY AT WADDON AERODROME, CROYDON, ON AUGUST BANK HOLIDAY, MONDAY, AUGUST 7, 1922

Prizes.—The following prizes will be presented by the Royal Aero Club:—Fastest time (winner of the Aerial Derby), trophy and £300; Handicap, 1st prize, trophy and £150; 2nd prize, £75; 3rd prize, £50.

Entries.—The entry fee is £10. Entries close on Wednesday, July 26, 1922, at 12 noon. Late entries will be received up to 12 noon on Monday, July 31, 1922. Late entry fee £15.

For this year's race, the course will be flown in the opposite direction to that of previous years, the turning points being in the following order:—Brooklands Aerodrome, Weybridge, Hertford, Epping and West Thurrock.

The gates at Waddon Aerodrome, Croydon, will be opened at 1 o'clock, and the competitors will be started on handicap times, the slower machines leaving about 2 o'clock. Two circuits of the course have to be made, and it is hoped the race will be completed before 5 o'clock.

Other Events

August Open Handicap: 16 miles

Prizes: 1st, £30; 2nd (if five or more starters), £10. Open to all types of aeroplanes.

Air League Challenge Cup.—A team race is being arranged between R.A.F., Kenley (the present holders), and another R.A.F. Station.

The machines to be used will be S.E.5's, kindly placed at the disposal of the Club by Aircraft Disposal Co., Ltd., and the Royal Aero Club Avros.

Exhibition Flights.—By well-known pilots.

KING'S CUP (Circuit of Britain Race), presented by HIS MAJESTY THE KING

THE Regulations have now been finally approved by His Majesty the King, and will be issued in a few days.

The date suggested for the contest is two days during the second week of September.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN JULY 16 AND JULY 22, INCLUSIVE

Route‡	No. of flights*	No. of passengers	No. of flights carrying Mails	No. of flights carrying Goods	No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
						h m.		
Croydon–Paris	56	197	22	39	55	2 27	H.P. W8B G-EAPJ (1h.42m.)	B. (3), D.H. 9 (1), D.H. 18 (1), D.H. 34 (4), G. (8), H.P. W.8B (3), Sp. (2), V. (2).
Paris–Croydon	57	136	10	35	53	2 59	D.H. 34 G-EBBS (2h. 5m.)	B. (5), D.H. 9 (1), D.H. 18 (1), D.H. 34 (3), G. (9), H.P. W.8B (4), Sp. (2) V. (2).
Croydon–Brussels ...	9	50	6	6	9	2 16	D.H. 34 G-EBBR (2h. 4m.)	D.H. 18 (1), D.H. 34 (1), V. (3).
Brussels–Croydon ...	9	32	—	5	9	2 48	D.H. 34 G-EBBR (2h. 34m.)	D.H. 18 (1), D.H. 34 (1), V. (2).
Croydon–Rotterdam–Amsterdam.	12	8	12	12	12	2 20§	Fokker H-NABM (2h. 3m.)	F. (6).
Amsterdam–Rotterdam–Croydon.	12	2	12	12	12	3 2 §	Fokker H-NABM (2h. 33m.)	F. (8).
Totals for week ...	155	425	62	109	150			

* Not including "private" flights. † Including certain journeys when stops were made *en route*.
‡ Including certain diverted journeys. § Rotterdam.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. R. = Rumpler. Sa. = Salmson. Sp. = Spad. V. = Vickers Vimy, Vulcan, etc. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Daimler Hire, Ltd.; Handley Page Transport, Ltd.; Instone Air Line; Koninklijkie Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

Incidental Flying.—Mr. Hayns and Capt. Stocken were busy during the week testing some dozen machines, for the Aircraft Disposal Co., at Croydon, and flying five of them to Brussels. These machines consisted of two Bristol Fighters, seven D.H. 9's, one Martinsyde F.4 and one S.E. 5a.

The De Havilland Co. maintained a daily service between Lympne and Brussels.

FLIGHT

INTERNATIONAL AIR CONGRESS, LONDON, 1923

FOLLOWING on the Congrès International de la Navigation Aérienne held in Paris in November, 1921, it is proposed to hold a similar congress in London towards the end of June next year. Group-Capt. H.R.H. the Duke of York, K.G., G.C.V.O., R.A.F., has consented to become President of the General Council of the Congress, and the Rt. Hon. the Lord Weir of Eastwood, P.C., has accepted an invitation to become a Vice-President. A strong Organising Committee, representative of all phases of British aeronautical activity, including the Air Ministry, has been formed, with His Grace the Duke of Sutherland as Chairman. This Committee is constituted as follows :—

Vice-Chairmen.—Maj.-Gen. Sir F. H. Sykes, G.B.E., K.C.B., C.M.G. ; Maj.-Gen. Sir W. S. Brancker, K.C.B., A.F.C. (Director of Civil Aviation) ; Lieut.-Col. M. O'Gorman, C.B. ; Sir Henry White-Smith, C.B.E. ; Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P. ; Brig-Gen. P. R. C. Groves, C.B., C.M.G., D.S.O.

Members.—Air Ministry : Brig.-Gen. F. L. Festing, C.B., C.M.G. ; Brig.-Gen. R. K. Bagnall-Wild, C.M.G., C.B.E. ; Air-Commodore J. M. Steel, C.M.G., C.B.E.

Royal Aeronautical Society : Lieut.-Col. A. Ogilvie, C.B. ; Mr. Griffith Brewer ; Lieut.-Col. W. Lockwood Marsh, O.B.E.

Royal Aero Club : Col. F. Lindsay Lloyd, C.M.G., C.B.E. ; Lieut.-Col. F. K. McClean ; Mr. H. E. Perrin.

Society of British Aircraft Constructors : Mr. C. R. Fairey ; Capt. P. D. Acland ; Mr. Charles V. Allen.

Air League of the British Empire : Mr. G. Holt Thomas ; Hon. Sir Newton J. Moore, M.P. ; Mr. Shirreff Hilton.

Air Transport : Sir Samuel Instone ; Mr. F. Handley Page ; Col. F. Searle.

General Post Office : Brig.-Gen. Sir F. H. Williamson, K.C.B., C.B.E.

General Secretary : Mr. Charles V. Allen.

Technical Secretary : Lieut.-Col. W. Lockwood Marsh, O.B.E.

The Congress will be open to all countries which are signatories of the International Air Convention, or are represented on the Fédération Aéronautique Internationale ; individual invitations being issued through national committees in process of formation in each country. Membership will be divided into two classes : (*a*) Ordinary Members ; and (*b*) Associate Members, comprising the families of ordinary members, at a subscription of £1 and 10*s.* respectively.

According to present arrangements, the Congress will occupy one week during the last fortnight in June, 1923, the reading of papers alternating with visits to various aircraft factories and establishments. It is hoped that the Air Ministry will be able to arrange for the Royal Air Force Pageant to take place on the Saturday of the Congress Week, and that the Royal Aero Club may organise a race meeting on the Tuesday or Thursday. Monday, Wednesday and Friday will be devoted to the reading of papers, and discussions thereon, which will be divided into four or more main groups or sections, which will hold simultaneous sessions in different rooms.

As the time available for the reading of papers will be limited, a "Reading Committee" is to be formed, though it is hoped to arrange that the official report of the Congress, to be published later, shall contain a wider selection of the papers sent in. An official reception will be held in the evening of the Monday of the Congress Week, and the proceedings will be closed by an official banquet on the Saturday.

It is important that the Congress should not be confused with the British Air Conference called each year by the Air Ministry. The latter is of a domestic nature dealing with aeronautical matters so far as the British Empire is concerned. The Congress, on the other hand, is essentially international in character, and is intended to be one of a series to be held in various countries at which experts may meet to discuss the technical and scientific development of aeronautics in all its aspects.

NOTICES TO AIRMEN

Pilots' Licences and Examination in Navigation, etc.

1. With reference to Notices to Airmen Nos. 13, 28 and 55 of 1921, the technical examinations therein referred to were brought into operation on July 11, 1922, for all persons applying for licences as pilots of flying machines, or for renewal of such licences.

2. The subjects of these examinations are as follows :—

Class A Licences (for Private Pilots).—Knowledge of rules as to lights and signals, rules of the air, and rules for air traffic on and in the vicinity of aerodromes. A practical knowledge of international air legislation.

Class B Licences (for Pilots of Passenger or Goods Flying Machines).—As for Class A Licences, with the following additions : Map reading, use of compass, location of position and elementary meteorology ; practical knowledge of the special conditions of air traffic.

3. Attention is directed to the syllabuses of these examinations published with Notices to Airmen Nos. 13 and 55 of 1921.

4. The examinations, which will be *viva voce*, will be conducted by an Air Ministry Board, and in the case of applicants for licences for flying passenger or goods aircraft, or for renewals of such licences, will be arranged, whenever possible, to take place on the same day as medical examination.

(No. 72 of 1922.)

NOTICE TO GROUND ENGINEERS

Flexible Rubber Connections in Aircraft

THE attention of Ground Engineers is directed to the following information with regard to the maintenance of flexible rubber connections as fitted to aircraft :—

1. The term "rubber joint" as used in this notice is to be taken to include all flexible rubber connections in aircraft or on aero engines, for oil, petrol or water.

2. Rubber joints fitted to engines or aircraft that have been stored for a period exceeding three months should be regarded as serving only as dust excluders. Immediately before the engine and/or aircraft first takes the air, all rubber joints throughout the machine should be renewed, the date of the renewal being entered in the aircraft and/or engine Log Books.

3. New joints thus fitted may be considered serviceable for three months from the date of fitting. They should, however, during this period, be freqeuntly examined and renewed if deterioration be detected.

4. After having been fitted for three months, all rubber joints for petrol should be considered under suspicion, and should be frequently and carefully examined. Any signs of restricted flow, collection of particles of rubber in the filter and/or such fittings as three-way petrol cocks, must be carefully watched for, as an indication of the condition of the rubber joint. At least once a month, a joint should be taken out of the petrol system and examined internally and for reduced adhesion between the plies. Immediately any such deterioration is detected, the whole of the joints in the petrol system should be replaced. In every case, all rubber joints for petrol should be renewed six months after the date of fitting.

5. Similarly, joints in the oil and water systems should be specially examined after having been fitted for three months, and periodically removed, but, in these cases, they need not be renewed until the first signs of deterioration are apparent. In the water system the joints that usually deteriorate most rapidly are those through which the water flows at its highest temperature.

6. It is pointed out that deteriorated joints can always be detected by simple examination. Chemical and other special tests are only required to detect liability of deterioration.

7. Great care should be taken that the result of each examination and the date of renewal of all rubber joints are recorded in the Log Books. Particular care should also be exercised that, when fitting rubber joints, all sharp edges at ends of pipes be removed before the rubber tubing is slipped on, as, unless this is done, damage to the interior of the tubing will result. Consequent on such damage, particles of rubber detected in the filters might create the impression that exceptionally rapid disintegration is taking place.

8. All rubber connections, where stored, should be kept in cool, dark and damp places.

9. *Cancellation.*

Notice to Ground Engineers No. 2 of 1920 is hereby cancelled.

(No. 8 of 1922.)

AIRCRAFT AND THE NAVY

AN interesting discussion occurred on July 18 during the Navy Estimates before Parliament upon the position of the Navy to aircraft and the relationship with the Air Ministry. Viscount Curzon, after referring to the much-debated question of capital ship construction, said the wisdom of building such naval craft was called in question owing to the menace from below and above the water. It was evident that all was not as it should be with regard to the Royal Navy in the air. The navy of the future must be prepared to take to the air, and a navy that could not do so would be at a hopeless disadvantage with regard to a navy that could. He asked whether the Admiralty were satisfied with the number of 'planes allocated to the Navy. We had nine fighters in the Navy. Could it be said that the Navy was prepared to repel air attack with only that number of machines? Speaking of the necessity of skilled personnel, he said: How could observers make correct wireless spotting signals to the ships dependent upon them for observation unless they were properly trained? The same applied to those who performed the exceedingly important work of scouting and reconnaissance. Unless the men had the proper training they would not be able to say whether they had seen a submarine or a battleship. Only by perfect co-operation between the aircraft and the Navy could they succeed under present conditions. He did not believe that skilled pilots could be supplied at a moment's notice. He would like to know how many observers were trained and how many would be required to bring the establishment up to full strength.

He had heard that it was the case, and he believed it to be true, that the Fleet, which was going to carry out a gunnery programme, carried on with that programme until the ammunition ran out for the year. It was then agreed to interrupt the programme, and recommence when the following year's ammunition allowance became available. When the Fleet was ready to go ahead with their gunnery experiments and progressive training they found that the pilots and observers whom they had been relying upon had been drafted to another quarter of the globe, and the training had to be started *de novo*, and all the ammunition fired away the year before was absolutely wasted. There was absolutely no co-operation there. The Air Ministry further stated that new types of machines for the Navy were to be adopted. When was the Navy going to see those machines in present circumstances, and where were the new types to come from? The Navy had no control over the question of how the money spent on aircraft was allocated. As we were supposed to have a one-Power standard as regarded the Navy, was the Air Force operating with the Navy up to the same standard? The Burney aircraft scheme was a very important one, but they had not the airships necessary to that scheme, or the money to provide them. But other Powers had airships. The United States had no fewer than four working with the Navy and doing experimental work. We could not afford to disregard the experience of other countries. The present arrangement was working very badly from the point of view of the Navy. This was partly due to the system and partly to the spirit prevailing at the Air Ministry. We should do no good unless we had a thorough reconstruction of the Air Ministry.

Lieut.-Col. Moore-Brabazon said the question of airships was one for experts. During the war it was proved that the hydrogen-built airship, from a military point of view, was one of the easiest things to knock out that ever went up in the air. True, America, from the naval point of view, looked with some hope to the airship, but that was because in America helium was found. In this and other countries helium was not findable. The complaint of the noble lord was really that we had not got enough machines. But was not that the complaint all round—of the Army, Navy and Air Force? Everybody admitted that we had not enough machines, but that was a question of money. The system under which we were running our aircraft today was the most economical one; if we went back to the old system there was bound to be duplication, which was so extravagant. The Air Force today had £10,000,000—just over the cost of one battleship—and it had with that to try to keep the Army efficient, the Navy efficient and to run its own independent air force, and, besides, sink money in capital undertakings such as buildings, because we could not have first-class mechanics kept in hovels. If the Air Force were to blame for not having sufficient aircraft, he thought they had been put in a very difficult position.

In regard to ordering new machines—again this was a question of money. Although he thought the machines used for the Navy today were as good as those of any other country, there must come a time, and that early, when the subject of more efficient machines must be gone into. Viscount Curzon, he said, had brought up on this vote the hardy annual of his own Air Force, and he complained bitterly, he thought, of the personnel attached to the Navy. But if they were short of trained personnel at the Admiralty, whose fault was it? Was not the Admiralty asked to find 400 officers for the air and they were to go back to the Navy? Who refused that? The Admiralty, and nobody else.

He had read in *The Times* column after column of arguments between the noble lord and Sir Percy Scott, in which the noble lord maintained how wonderful the capital ship was, and how it could not be knocked out by any aircraft. The noble lord was an expert, and he was not going to dispute that, but he did notice today an amazing nervousness of the possibility of what might happen and the plea that the capital ship might be defended, not by its own inviolability, but by other aircraft. He admitted that the Navy could be made more efficient than it was from the point of view of aircraft; but that was not a matter of organisation but of money. If the noble lord pressed for more money for the Air, he would get a smaller Fleet but one better equipped with aircraft.

Mr. G. Lambert said the first duty of all three defensive forces was to defend this country. Although he did not anticipate any attack upon us at present, could the Admiralty say that the taxpayers' money was being spent to the best advantage, especially as to the £16,000,000 to be spent on two capital ships? Personally, he did not pretend to express an opinion as to the value of the capital ship, but surely it was useless, wasteful and extravagant to spend money on capital ships unless you had sufficient aircraft to protect them. He should like to ask whether some of this money would not be better spent upon aircraft. They wanted to have the question settled as to whether this £16,000,000 should be spent before the Navy had secured a sufficient air force.

Rear-Admiral Sir R. Hall said the complaint of the Navy was that the officers and men who were concerned with aircraft were not part of the Navy. It was only by full and enthusiastic co-operation of the rank and file that they could get full benefit from the new arm.

Lieut.-Comdr. Kenworthy said that apparently Sir R. Hall's charge against the Air Ministry was that when the officers attached to the naval wing of the Air Service were sent to sea to fly aeroplanes used by the Fleet, when they were on board ship, they were not available for watch-keeping, they wore a different uniform and were under their own discipline. If the idea of the Admiralty, as represented by the late Director of Naval Intelligence, was that if he wanted to get control of officers trained in naval flying in order to make them naval officers first and secondly air officers, if their air duties were to be secondary to their naval duties, then heaven help the Air Service and heaven help the Navy. If that was the attitude of hon. and gallant Members, he did not wonder that the Air Minister was keeping a tight hold of his own naval air wing and was resisting the attempt to re-absorb it in the Navy.

Mr. Amery, in replying to points raised, said there was nothing in recent experiments to justify the idea that the capital ship was not capable of defending itself against the menaces with which it was threatened, but, having said that, he did agree whole-heartedly with what was said by Viscount Curzon, that, in an ever-increasing degree, the Navy must consider the importance of the air factor not only from the point of view of the defence of these islands against air attack, but also as an integral part of the fighting fleet.

Upon the question of the relation of the Admiralty to the Air Force, over the marginal region where they came into contact it was vital that their co-operation should be of the fullest kind. One thing he would say was that there was not the slightest idea of challenging the general positions laid down by the Leader of the House in March as to the existence of the separate and independent air force.

The only question in issue to his mind was that of considering how the integrity of naval control over the air units actually working with the fighting fleet could be most effectively secured, consistently with the fullest training of the personnel of those units in every aspect of air science. That question was at present under discussion by the Committee of Imperial Defence and by the Chief of the Air Staff and the First Sea Lord, together with the help and advice of the Colonial Secretary. The air policy for the Navy was laid down in the first instance by the Admiralty, and the

Air Ministry endeavoured to supply what was needed as fully as was practicable. There was necessarily a considerable margin between what the Admiralty would like to see, the experiments which they wished to make, the strength of the Air establishment which they would like to have in their hands at this moment and what the finances of the country at present allowed.

The designing of aircraft for the Navy and the designing of air torpedoes was a matter for the Design Department of the Admiralty, acting, of course, in the closest touch and collaboration with the Air Ministry. The Navy had two aircraft carriers—one in the Atlantic and the other in the Mediterranean. Three more carriers were being completed, and he hoped that two would be ready before the end of the financial year and one before the end of the calendar year. At the present time the Admiralty had the pilots and the aircraft for the two carriers which were actually on service. The United States Navy had a naval air force of which the cost was set down in the present year's Estimates at £3,250,000, which did work for the Navy and, in addition, a certain amount of work from the shore, such as under our organisation would come within the defence work of the Air Force. We had six fighting aeroplanes with pilots actually with the Fleet, and an immediate reserve of three more, and he understood that three others were in reserve under the control of the Air Ministry. The number of 86 fighting aeroplanes which it had been said that the United States Navy had was not the number which that navy had today, but the number proposed for 1923. By the time that the United States proposals were carried into effect we should have a larger provision of aircraft carriers than we had at present, and he trusted a larger provision of aircraft also. The exercises, of which some account had been published in the Press that morning, were not of a wholly novel character, but were part of a series of very valuable and instructive exercises which had been carried out for some time. It was not true that these aeroplanes employed a smoke screen. That was an interesting detail thrown in by the newspaper but not based on actual facts. There was not a surprise. The torpedo-carrying aeroplanes were sighted about 15 minutes before firing their torpedoes. They were attacked in dummy by fleet-fighting planes as they approached. They were under dummy gunfire from escorting light cruisers and destroyers when at a low altitude before firing their torpedoes. Hon. Members would realise the great difference upon the *morale* and steadiness of a flier between dummy fire and real fire directed against him. The attack was developed under conditions which were necessarily favourable to the attack. The number of hits reported under these favourable conditions was not considered to be at all large, from the Admiralty point of view, or, at any rate, not beyond what was expected.

Personals

Married

Flying Officer HENRY JOHN HUNTER, R.A.F., third son of the late William Hunter, of Reigate, and Mrs. Hunter, of Polmood, Cranbrook, was married on July 19, at St. Andrew's Church, West Kensington, to MOIRA GWENDOLEN HATTON, younger daughter of Captain H. G. S. TUITE and Mrs. TUITE, of 19A, Perham Road, W. 14, and niece of Sir Morgan Tuite, Bart., of Sonna, Co. Westmeath.

AUSTEEN REES, late R.A.F., second son of Mr. and Mrs. Rees, was married, on June 10, at the Cathedral, Victoria, B.C., to OLIVETTE, elder daughter of the late Mr. JOHN OAKLEY MAUND and Mrs. OAKLEY MAUND.

Flight Lieut. HERBERT EDWIN TANSLEY, M.C., R.A.F., third son of Mr. and Mrs. W. Jackson-Tansley, of Washwood Heath, was married on July 5, at Uxbridge, to ANN (SHOCK) DENNIS (formerly Brown), younger daughter of Mr. and Mrs. George Brown, of "Samson's," Bourn, Cambridgeshire.

To be Married

The engagement is announced between JOHN BERESFORD COLE-HAMILTON, R.A.F., late R.N., and SYBIL, elder daughter of Sir JOHN and Lady LATTA, of 12, Portman Square, W. 1.

Killed

Flight Cadet VYVIAN OSBORNE GILLMORE was killed in an aeroplane collision at Cranwell, Sleaford, on Friday, July 7.

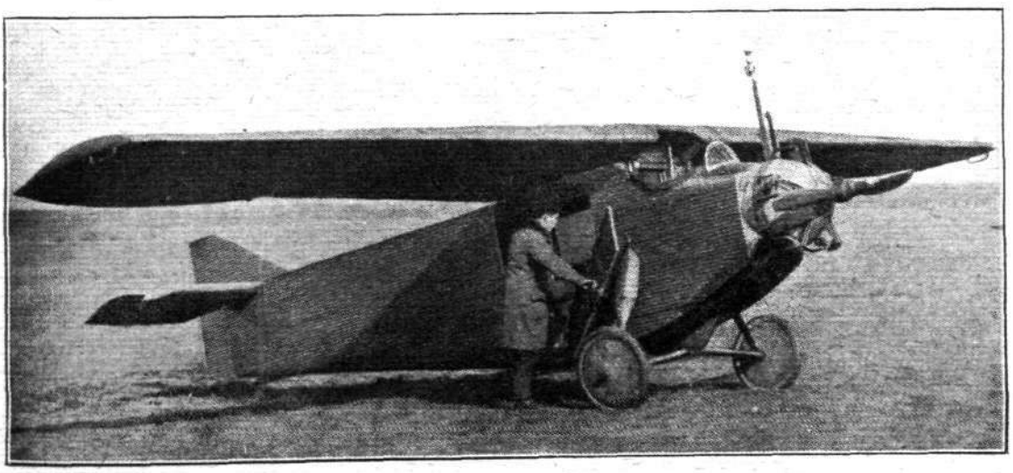
Capt. SIDNEY J. STEWART, late R.F.C. (27th, 40th and 208th Sqdns.), who was accidentally killed while flying in Paraguay on July 8, was the eldest surviving son of Mr. and Mrs. Edward Stewart, Alton, Hants. His age was 27.

Item

The will of Pilot Flying Officer GEOFFREY ROBINSON, M.C., of the Royal Aircraft Establishment, Farnborough, and late of Sheffield, who was killed in an aeroplane accident near Burnham, Bucks, on February 10, aged 28, has been proved at £274.

The Gordon-Bennett Balloon Race

WE learn that the following countries and pilots will participate in this year's Gordon-Bennett Balloon Race, which starts at Geneva on August 6:—England.—Ernest Allen, Griffith Brewer and John Dunville; Belgium.—Lieut. Labrousse, Capt. George and E. Demuyter; France.—Maurice Bienaimé, Georges Cormier and Jules Dubois; Italy.—Commandant Barbanti, G. Valle and A. Guglielmetti; Spain.—E. Magdalena and F. Martinez Sanz; Switzerland.—Capt. Armbruster, 1st Lieut. Ansermier and Maj. Gerber; and United States.—Oscar Weslover, H. E. Honeywell and W. Reed.



A new Junkers' three-seater: This machine, to which reference was made in FLIGHT recently, is a departure from Junkers' practice in having the wing placed on top instead of low down on the fuselage. The cabin has accommodation for two passengers, and as the engine is a Siemens of 60 h.p. only, the machine is using but 20 h.p. per occupant, which should give very economical running.

LONDON TERMINAL AERODROME

Monday evening, July 24.

DESPITE usual, but inexplicable, fluctuations, passenger traffic on the various London-continental air routes continues to show signs of a definite improvement, and air-line managers are beginning to take quite an optimistic view of the situation, though the rivalry between the different lines remains as keen as ever.

Alterations are being made in the times of one or two of the services. The K.L.M. resume their 10 a.m. service to Rotterdam and Amsterdam today, and will cease running the 6.15 a.m. early morning monoplane which was put on to supply newspapers for the conference at the Hague. The Instone Air Line, now that they are in a somewhat better position as to machines, are resuming their mid-morning service to Brussels, and one of their machines will in future leave the air-station for Brussels at 11.45 a.m.

A striking example of the value of the air services to provincial business men was afforded on Wednesday, when a Liverpool business man travelled to Paris on the 5.30 a.m. Daimler newspaper machine. He remained at business in Liverpool right up to the end of the day on Tuesday evening, and, in fact, did not leave Liverpool until after 9 p.m., reaching London at about 4 a.m. on Wednesday morning. A car was waiting at the station to take him to Croydon, and he was in Paris before 8 a.m. This is a striking illustration of the value of the air services in connection with the night trains from the provinces, and it is a point which the various air services might do well to take up. The advantages offered by air travel on the existing lines are far greater in the case of provincial business, both passenger and goods, than is the case with London, and it would, perhaps, pay one of the air-lines to concentrate on an effort to get provincial business.

The Instone Air Line have now obtained delivery of three Vickers "Vulcans," and all of them have been put on service. This machine is known to the staffs at the air-station by the familiar name of "The Flying Pig," and it certainly is the most peculiar-looking machine on any of the services.

Whims of an American Passenger

MR. YOUELL left for Penzance with an American passenger who wished to see "the end of Britain," on Friday morning; but, after arriving at Yeovil, his passenger expressed a desire to see Birmingham instead. Humouring him in this strange fancy, Mr. Youell flew on to Birmingham, and arrived back at Croydon on Saturday evening.

During the week-end, the Surrey Flying Services were busy taking up 5s. joy-riders, although the weather spoilt business again, and the crowds were by no means as large as could have been wished. The Surrey Flying Services have now three Avros available for taxi work and joy-rides. Two of these are fitted with 120 h.p. Clergets, and the other with an 80 h.p. Renault.

Commander Perrin, of the Aero Club, was at the air-station on Saturday with a bundle of posters announcing the Aerial Derby. He tells me that it is expected that both Sadi Lecointe and Kirsch will take part in the race, which will once again assume an international character.

Mileage Figures from Amsterdam

THE K.L.M. announce that the machines entering and leaving their aerodrome at Amsterdam have now flown a total distance of 1,000,000 kms. This total includes the machines that were flown by Airco and Handley Page in conjunction with the K.L.M. in the early days, and also the machines operated by the French companies on the Paris-Amsterdam route.

The newspapers which now go to Paris each morning at 5.30 a.m. on one of the Daimler D.H.34's, had a remarkably rapid trip on Monday last. From the moment of leaving the air-station at Croydon to the actual delivery at the Paris office, by motor-car from Le Bourget, the time was only 2 hours 7 minutes.

The Napier-engined Handley Page W.8 made a rapid journey to Paris on Wednesday, taking only 1 hour 42 minutes by the official messages. This was claimed in the daily newspapers as a record for a passenger machine. It is certainly a record for a twin-engined machine, but is away behind the times made by single-engined passenger machines. A Napier-engined Airco 16, piloted by Mr. Powell, accomplished the journey between London and Paris in 1 hour 26 minutes, while a similar machine, on an entirely different occasion, flew from Paris to Croydon in 1 hour 27 minutes.

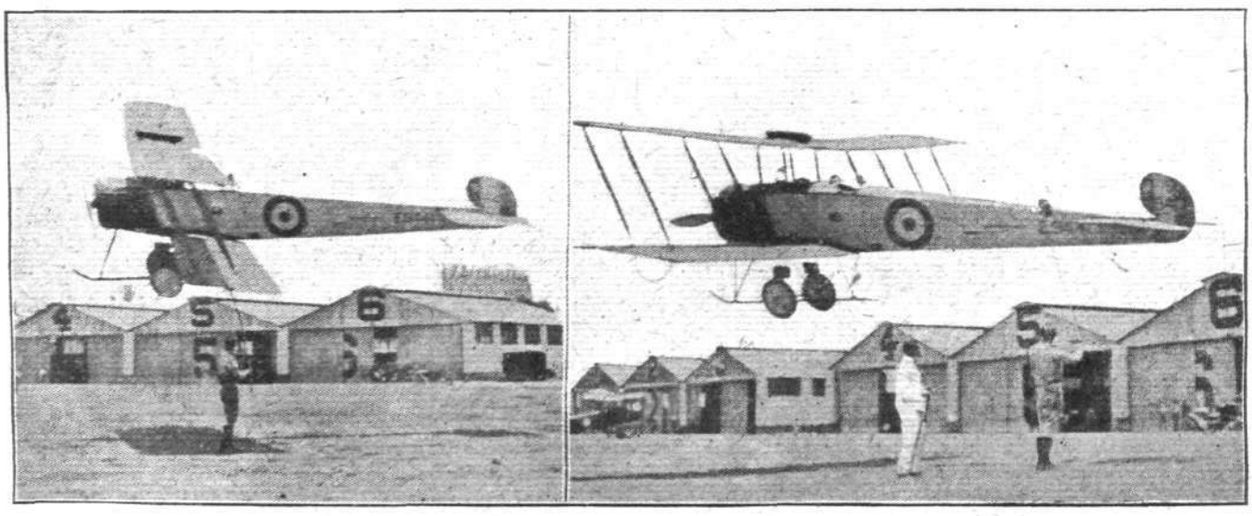
On Monday morning, Maj.-Gen. Sir W. S. Brancker, Director of Civil Aviation, visited the aerodrome in order to perform the opening ceremony in connection with the new repair and test shops of the Daimler Airways. Taking as his text, one of the Daimler D.H.34 "expresses," which those who attended the function inspected with great interest, and which has, during the last three months, flown a distance of 53,000 miles, Gen. Brancker made some very pertinent observations. One thing he said was that he believed that in three years' time commercial aviation would be on a paying, unsubsidised basis, and that in ten years there would be a widespread network of airways throughout the Empire. One specially notable fact in connection with the Daimler "express," which has put up the 53,000 miles record in three months, is that official inspection has shown it to be, if anything, in better flying trim than it was on the day on which it first began flying between London and Paris.

Weather Forecasts from France by Wireless

WEATHER forecasts issued by the French Meteorological Office are now being received by wireless and exhibited side by side with the forecasts issued by our Meteorological Office on the 'drome. A typewritten notice alongside these forecasts calls attention to the fact that no responsibility is accepted by the "meteor" people on this side of the Channel for any statement contained in the French forecasts.

Some of the K.L.M. monoplanes are now to be fitted with wireless sets similar to those fitted to the British machines. In fact, I am told that they are to be fitted by the British Marconi Company and will be maintained in repair from Croydon. It is acknowledged that the wireless sets which are fitted to the British machines are far in advance of any others throughout the world.

There is a persistent rumour at the air-station that the Instone Air Line are about to open a service to Cologne as an extension of their London-Brussels service. It is also rumoured that they are at the same time to close their service to Paris.



A WAY THEY HAVE IN MEXICO: A test for sound judgment and nicety of control employed at the Valbuena Military Flying School. The pilot has to fly close to a man on the ground, who holds up a pole with a hat on the top, and knock the hat off with the wing tip!

FLIGHT

IN PARLIAMENT

Royal Air Force Personnel

MR. MALONE on July 12 asked the number of officers and men whose duties do not normally take them in the air, and the number of qualified pilots and observers whose duties normally take them in the air and are now actively so employed?

Captain Guest: Officers and men whose duties do not normally take them in the air include, in the first place, officers belonging to the stores, chaplains, and medical branches, and these number 550. In addition, there are a certain number, about 70, of officers on the general list who are medically unfit for full flying duties. With regard to the airmen, there are 24,535 whose duties do not normally taken them in the air, but a considerable number of these have to go up for the testing of engines, wireless operations, and other duties. The number of qualified pilots and observers, whose duties do normally takes them into the air, comprise not only pilots and observers employed with Service squadrons, but also officers employed as instructors in flying training schools and other instructional establishments. There are also those whose duties include the inspection of stations, or the testing of new devices like cameras, wireless apparatus, bombs, etc., all of which necessitate their going into their air. These, in addition to the pilots, account for practically all the officers on the general list, who, as stated in my reply to my hon. friend on February 27 last, number nearly 2,200, exclusive of the ex-naval warrant officers referred to therein.

Civil Aviation Subsidies

MR. L'ESTRANGE MALONE on July 13 asked the Secretary of State for Air how much of the money allowed for civil aviation—subsidies, etc.—in the 1922-23 Estimates has not yet been allocated; how is it intended to utilise this sum; whether this sum is considered sufficient; whether he has recently received representations as to the serious position of the air industry; and whether he can make a statement as to the Government's policy?

Capt. Guest: I assume that my hon. friend is referring to the sub-head of Vote 8, which relates to "Civil Aviation Subsidies"; if he refers to the Vote as a whole he will see that the allocation of the money included in it is given in fairly full detail in the Air Estimates. As regards the sub-head for subsidies of £207,000, £107,000 was provided for the purchase of machines to be supplied on hire-purchase terms to approved civil aerial transport companies. £100,000 was provided for subsidies in cash to such companies. It is possible that the subsidy grants earned and the requirements in machines may be less than the Estimate, but I am not yet in a position to say what savings will arise or how they will be allocated. In considering the allocation of any savings, the Air Ministry would most certainly have regard to the present position of transport companies—whose not unreasonable estimates of traffic have not been fulfilled—and of the aircraft industry.

Air Power

CAPT. VISCOUNT CURZON asked the Prime Minister whether he is aware that the deputation from the Parliamentary Air Committee to be received by the Committee of Imperial Defence will not include any representative able to speak for the naval side of the case; and whether, in view of the importance of the subject and of the fact that the Royal Navy is very much involved in the consideration of the problems of the air, he will allow an opportunity for certain members of the Parliamentary Navy Committee to appear before the Committee of Imperial Defence and state their views on the naval aspect of the problem of air defence?

Maj.-Gen. Sir J. Davidson asked the Prime Minister whether he is aware that the deputation from the Parliamentary Air Committee to be received by the Committee of Imperial Defence will not include representatives able to speak from the Navy and Army sides of the case; and whether, in view of the importance of the subject and the fact that all three Services are closely involved in the problems of the air, he will allow an opportunity for certain members of the Parliamentary Army Committee to appear before the Committee of Imperial Defence and state their views on the military aspects of the problems of air defence?

The Prime Minister: The most convenient method would appear to be for the Parliamentary Navy Committee, in the one case, and the Army Committee in the other, to get in touch with the Parliamentary Air Committee with a view to a single deputation on the subject.

Viscount Curzon: Is the right hon. gentleman aware that the Parliamentary Navy Committee has met, and endeavoured to get into touch with the Parliamentary Air Committee, and they do not want the representatives of the Navy to accompany them?

The Prime Minister: I am sorry that there should be any difference of opinion. We are only anxious to get as much assistance as possible from Members who take an interest in this matter to help us to come to a right conclusion. We are anxious to hear what can be said by those who are more cognisant of the Navy than the Army, and also those who are specially interested in the Army side of the question. I think that hon. Members who take an interest in the matter in both capacities should be able to come to an agreement as to the deputation to be received by the Committee of Imperial Defence.

Viscount Curzon: Will the deputation to be received by the Committee of Imperial Defence not be limited to four persons?

The Prime Minister: I think it would be a mistake to have more; that is quite ample—two for one point of view, and two for the other.

Viscount Curzon: If the Parliamentary Air Committee do not wish the Navy representatives to accompany them, may I bring the matter to the notice of the right hon. gentleman again?

The Prime Minister: Yes.

Capt. W. Benn: Could not the right hon. gentleman give an additional Supply day to this very important Service?

The Prime Minister: Yes; if there is a general desire, the Government will try to find a Supply day for the purpose. But I do hope before they come that the representatives of the Air Committee in this House will be able to accommodate their views to those of the other gentlemen mentioned, and present their case together before the Committee of Imperial Defence. We should like to have the matter examined by the Committee of Imperial Defence before the discussion in this House.

Burney Airship Scheme

CAPT. VISCOUNT CURZON on July 17 asked the Prime Minister whether the Government have as yet come to any decision upon the Burney airship scheme?

Mr. L. Malone asked the Prime Minister whether His Majesty's Government have yet arrived at a decision in regard to the Burney airship scheme; whether it has yet been approved; and whether they have taken into consideration the relative cost, efficiency and advantages of granting assistance on the same lines to similar schemes employing aeroplanes instead of airships?

The Prime Minister: As a result of several meetings of the Committee of Imperial Defence, it was decided that in view of the need for economy no money should be expended in developing an airship service, either for commercial purposes or with the object of establishing Imperial communications. A special sub-Committee is being appointed, with my hon. friend the Parliamentary Secretary to the Admiralty as chairman, to study in detail the technical aspects of Comdr. Burney's scheme with a view to ascertaining if Comdr. Burney's claims were well founded and if his scheme was likely to produce airships which would be of national value in time of war. Full consideration is being given to the possibility of the employment of airships in connection with Imperial air communications.

Viscount Curzon: Will the Report of this Committee be published, and is the right hon. gentleman aware of the great delay that has already taken place in referring the matter from one Committee to another? I hope this does not mean that there will be any further delay.

The Prime Minister: It is doubtful whether it is desirable to publish the Report of a private Committee of the Committee of Imperial Defence.

Viscount Curzon: Could a general outline of the Report be published, if at all possible?

The Prime Minister: I will consider that.

Aircraft Industry

VISCOUNT CURZON asked the Prime Minister whether his attention has been drawn to the very grave position of the aircraft industry in this country; whether he is aware that it is in immediate danger of complete collapse, and that all development and research is practically at a standstill; that, if this should occur, it will not be possible to provide for expansion in emergency, and that the industry may take years to recover; that it has been admitted by the Admiralty that the present organisation of the Royal Air Force does not provide the Royal Navy with the machines and personnel required, both lighter and heavier than air, for its present establishment; and whether he can state what immediate steps the Government intend to take to meet the grave developments and to provide for future requirements, both civil and military?

The Prime Minister: I am fully alive to the position of the aircraft industry, though I cannot accept all the statements made by my noble and gallant friend, which seem to me to be exaggerated. As I have already announced, the whole question is engaging the careful consideration of the Committee of Imperial Defence.

Viscount Curzon: When the right hon. gentleman says my statement is exaggerated, is he aware that the Secretary of State for Air has already announced that he views the situation with grave alarm?

Naval Aircraft

VISCOUNT CURZON, on July 18, asked the Secretary of State for Air whether any of the machines working from, or with, H.M.S. *Argus* have recently crashed, and how many aeroplanes were available for service, working with the Royal Navy on July 16, 1922, for bombing, fighting, torpedo-carrying, observation, and training, respectively?

Capt. Guest: The answer to the first question is that, since May 15 last, only two aeroplanes have been seriously damaged, and written off, during deck landing practice. Damage to aeroplanes is to be expected in training exercises of this kind, but this does not affect the number of aeroplanes available, damaged machines being at once replaced from the supply held in immediate reserve.

The answer to the second question is, that aeroplanes are available in the following numbers, including the 50 per cent. first line reserve, which is kept at the unit and provides immediate replacements for any damage to unserviceable aeroplanes:—

Reconnaissance.—18 ship planes, 18 float planes, 15 flying boats.
Spotting.—18 ship planes.
Torpedo-carrying.—18 ship planes.
Fighting.—9 ship fighters.
Training.—9 float seaplanes, 12 flying boats.
Development.—6 flying boats, 4 torpedo ship planes.

Thus, there are 127 service aeroplanes in active commission and first line reserve engaged in aerial and naval peace exercises or in naval air training and development. In addition to this, two of the reserve squadrons, comprising 36 aeroplanes, including immediate reserve are, *inter alia*, being used for certain other special forms of naval co-operation. Finally, there is maintained behind these units a main reserve of the various types, amounting to over 200 aeroplanes without pilots, all of which would be available for the reinforcement of the above naval units. The actual grand total of aeroplanes available for all purposes connected with the Navy is 369, exclusive of the two reserve squadrons mentioned above.

Lieut.-Commander Kenworthy: Does not the difference between this answer and the answer given by the Parliamentary Secretary to the Admiralty show a great lack of co-ordination between the Air Service and the Admiralty?

Viscount Curzon asked the Secretary of State for Air whether pilots working with the Royal Navy are interchangeable with pilots working with the Royal Air Force in other areas; whether such changes are in fact made; and whether any of the pilots borne in or attached to His Majesty's Ship *Argus* have recently been changed?

Capt. Guest: In answer to the first question, pilots working with the Royal Navy are interchangeable with those working on other duties, as it is considered necessary to give them the widest possible experience. A certain amount of special practice work is needed in connection with co-operation with the Fleet, and pilots so engaged are, as far as possible, retained in their appointments for a period of four years; though in practice, on account of promotion, or owing to their being required for special appointment, or for some other similar reason, the full period is not always served by all officers.

The reply to the second question is in the affirmative. With regard to the third question, two pilots have been changed during the current year. One of these was required for a course at the Royal Air Force Staff College, and the other for experimental work.

Short Aeroplane Tests

MR. MALONE asked the Secretary of State for Air at what date the tests in regard to corrosion and vibration were actually commenced on the Short Brothers all-metal aeroplane, exhibited at Olympia in 1920 and immediately purchased by the Air Ministry?

Capt. Guest: Investigation on the corrosion of metal alloys which had been initiated during the War, and then suspended, was resumed early in 1921, by a sub-committee of the Department of Scientific and Industrial Research, whose report is waited. (The material used in the Short aeroplane was well-known and is one of those under investigation by the Committee.) As regards the vibration tests, the aeroplane arrived at Farnborough on February 1, 1921, and a detailed examination of the machine took place. Straight flights were authorised in May, 1921, static tests commenced in June, vibration tests in September, and both were completed in November, 1921.

Air Service

LIEUT.-COL. A. MURRAY, on July 19, asked the Prime Minister whether his attention has been drawn to the statement made by the First Lord of the Admiralty, in an address to the 1920 Club, to the effect that the Navy must have control over its Air Service; and whether this statement represents the views of His Majesty's Government?

Mr. Chamberlain (Leader of the House): The Government policy was stated by me in this House on March 16 of this year, and to this statement I have at present nothing to add, as the enquiry into the system of naval and air co-operation which I then foreshadowed is still proceeding. I should add that the meeting addressed by my noble friend was a private one, and

reporters were not present. The account of what he said which reached the Press was, I am informed by him, unauthorised and incorrect.

Lieut.-Col. Murray: Can the Lord Privy Seal tell us what the right hon. gentleman did say?

Mr. Chamberlain: Nothing inconsistent with the statement of policy which I made to the House in March last.

Captain Wedgwood Benn: Will the Committee to which the right hon. gentleman has referred give effect to the decision of the Government to maintain the unity and integrity of the Air Force?

Mr. Chamberlain: No, Sir, the decision of the Government was that there should be an integral Air Force, and the Committee to which I have referred, and the appointment of which I then foreshadowed, was to consider methods in which Naval and Air Force co-operation could be most effectively carried out to the advantage of both services, and, above all, to the advantage of the country.

Mr. Lambert: When will the Committee report?

Mr. Chamberlain: I cannot say. It is dealing with very important matters, and with matters, admittedly, of some difficulty. With every good will on both sides there will be no delay, but I cannot fix a time.

Aeronautical Research

LIEUT.-COLONEL MOORE-BRABAZON on July 20 asked the Secretary of State for Air if he will state what provision has been made in the Air Estimates for pure aeronautical research; and what percentage of the total Estimates is devoted to this Department?

Captain Guest: The total provision made in the Air Estimates for carrying out research work is £1,147,000. This figure represents the sum which is devoted to all forms of experimental and research work carried out under the direction of the Air Ministry, and into this work enters a very substantial element of pure research, the cost of which it is not possible to extricate from the remainder of the Vote. It also includes a sum of £47,000, which is specifically confined to pure research work carried out at the National Physical Laboratory, at the Air Ministry Laboratory, and by the Aeronautical Research Committee, the Ordnance Committee and Research Department at Woolwich, and other joint establishments, and also by special consultants.

Air Ministry Economies

CAPTAIN LOSEBY, on July 21, asked the Secretary of State for Air whether, as a result of the Geddes recommendations, any economies have been effected in the secretariat of the Department; if so, to what extent; and how do such economies, if any, compare with the reductions effected in the Directorate of Research?

Captain Guest: The answer to the first question is in the affirmative; to the second, that 29 temporary administrative and clerical officers have been discharged; to the third, that 53 persons on the staff of the Directorate of Research have been discharged or are under notice of discharge.

LOSS OF FRENCH "SPAD" AEROPLANE OFF FOLKESTONE

THE Air Ministry announces that the investigation which was previously announced as being made by the Inspector of Accidents into the circumstances attending the unfortunate accident to the French "Spad" aeroplane off Folkestone on June 3, which resulted in the loss of the machine when 3 miles from the coast and the death of all on board, has now been completed. As was foreshadowed in a previous *communiqué*, the finding of the Inspector of Accidents is that the evidence available is insufficient to determine the cause of the accident.

In view of the public interest in the matter a summary of the main facts regarded as established by the enquiry is given as follows:—

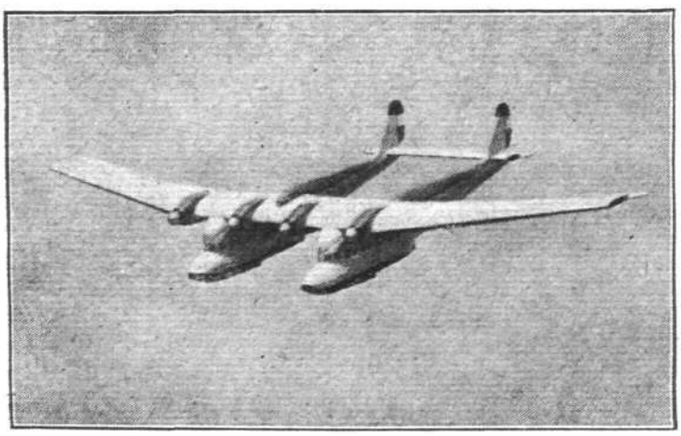
The aeroplane, after undergoing certain modifications, including the installation of a Hispano-Suiza engine, was granted a fresh certificate of airworthiness by the French authorities on April 26, 1922. On May 29, the pilot flew the aeroplane from Paris on its first journey after re-certification, and had a forced landing at Lympne, owing to a broken oil pipe. After repair, he continued the journey to Croydon on June 1, 1922. On June 3, the day of the accident, before the flight was commenced, the machine was examined and passed by an English ground engineer licensed by the Air Ministry. The pilot was experienced, and so far as is known in good health. The weather conditions for flying over the London-Paris route at the time of the accident were fair. The sky was overcast by a layer of cloud at a height of 1,500 to 2,000 ft., accompanied by thin mist over the sea. Visibility inland was good, but over the Channel it was about 4,000 yds. at the surface. The wind was north-west, about 15 m.p.h. The engine was running satisfactorily throughout the flight, but evidence as to the behaviour of the machine after finally leaving the coast is conflicting and unreliable.

In the absence of any evidence as to technical or climatic causes to which the accident could be definitely attributed, the question whether it might have been brought about by any interference with the pilot or the control mechanism was considered. The conclusion was, however, formed that, owing to the almost complete partitioning off of the pilot's cockpit, it was hardly possible for any such interference to have taken place accidentally, and no evidence was found to support a theory that such interference had taken place intentionally.

Albert Medal for R.A.F. Officer

THE King has awarded the Albert Medal to Squadron-Leader Charles Curtis Darley, of the R.A.F., in recognition of his gallantry in endeavouring to save life.

On the night of September 27, 1919, a Vickers-Vimy aeroplane, piloted by Captain Cecil Hill Darley, brother of Squadron-Leader (then Flight-Lieutenant) Darley, who was acting as navigation officer, made a forced landing by Lake Bracciano, some twenty miles north of Rome, when on a flight from England to Egypt. On the following morning, in taking off, the aeroplane failed to clear a telegraph pole, and crashed, immediately bursting into flames. Squadron-Leader Darley was thrown clear, but at once rushed to the blazing wreckage and displayed very conspicuous bravery and devotion in persistent, but unavailing, attempts to rescue his brother.



GERMAN DESIGN FOR LARGE FLYING BOAT: The photograph shows the scale model of a twin-hull flying boat, apparently of Junkers' design. The machine, which is stated to be all-metal, will have a span of 200 ft. and is to be driven by four engines of 700 h.p. each, probably of the Junkers' semi-Diesel type. Each hull is to seat 30 passengers. One wonders what will happen to the centre-section of the wing when the machine is taxying obliquely in a rough sea. Otherwise the design appears to be very clean.

Admiralty and Aircraft Exercises

THE following is issued by the Admiralty:—

In view of the unauthorised and inaccurate reports which have appeared in the Press with regard to the torpedo aeroplane attack on the Atlantic Fleet which took place off the Isle of Wight on July 7, in the presence of the King, the Admiralty consider it desirable to issue the following brief statement of the facts:

1. The exercise was in no sense novel, and was designed as a spectacle rather than as a critical experiment. Similar exercises have been carried out on several occasions during the past three years, and the results on July 7 only confirmed previous experience.

2. In order to afford practice to the torpedo aeroplanes the Fleet approached to within a few miles of the aircraft base in broad daylight at low speed, on a prearranged day and at an hour signalled in advance to the aircraft. There was, therefore, no surprise attack, and the conditions were essentially unwarlike and unreal.

3. Moreover, as is unavoidable in all peace exercises, the Fleet offered an unresisting target to the aircraft, whose attack was undisturbed by any counter-offensive action, whether by the interference of Fleet aircraft, gunfire from the light cruiser and destroyer screens, or heavy, medium, and anti-aircraft gunfire—combined with splash barrages—from ships in the battle line.

4. The aircraft were thus allowed to develop to the full their offensive, whilst the Fleet was debarred from defending itself in any way. In spite of these favourable conditions the number of hits obtained on the battle line was small and of minor tactical importance.

5. Throughout the operation the pilots of the attacking aircraft showed skill and dash in the handling of their machines, but, as already indicated, the conditions were so unreal that no practical lessons affecting the security of the Fleet can properly be deduced from these exercises.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, July 18, 1922

Air-Commodore D. Le G. Pitcher, C.M.G., C.B.E., D.S.O., to be Director of Equipment, Air Ministry (*vice* Air-Commodore C. L. Lambe, C.B., C.M.G., D.S.O.); August 1.

General Duties Branch

Pilot Officer G. S. Brown to be Flying Officer; July 15. E. K. Clifford is granted a short service commn. for three years on the active list as a Flying Officer, with effect from, and with seniority of, July 10. Sec. Lieut. C. C. Musselwhite, Middlesex Regiment, is granted a temp. commn. as a Flying Officer, with effect from, and with seniority of, July 1, on seconding for four years' duty with the R.A.F. Wing Commander C. R. S. Bradley, O.B.E., is placed on half-pay, Scale A; July 16. Squadron Leader J. C. P. Wood is restored to full pay from half-pay; June 1. Flying Officer K. W. McKichan (Lieut. R.A.) relinquishes his temp. commn. on return to Army duty; July 1. Flying Officer D. M. Matthews resigns his short service commn.; July 19.

Stores Branch.

Flying Officer G. W. Longstaff is confirmed in rank; July 5.

Medical Service

E. E. Isaac, M.C. (Capt. R.A.M.C.), is granted a temp. commn. as a Flight-Lieut., with effect from and with seniority of, July 3.

London Gazette, July 21, 1922

General Duties Branch

Sqdrn. Ldr. (actg. Group Capt.) H. C. Ellis, C.B.E. (Lieut.-Col., R.A.P.D.), is seconded for a further two years' duty with the R.A.F.; April 1.

Memoranda

Capt. P. Sidney, Northumberland Fus., is granted permission to retain the rank of Lieut.-Col., R.A.F., on retirement from the Army. The permission granted to F. Horsley to retain the rank of Lieut. is withdrawn on his joining the Army; May 26. The permission granted to A. Wilson to retain the rank of Sec. Lieut. is withdrawn on his joining the Army; July 1.

Gazette, July 11, concerning Sec. Lieut. W. Cougle, is cancelled, and Gazette of June 30 stands.

THE FRENCH GLIDING COMPETITION

THE number of entries for the French gliding and soaring competition, which is to be held at Clermont-Ferrand from August 6 to August 20, has now reached 49. The list up-to-date is as follows, although it appears probable that more may be added before the opening of the competition :—

1. Moriss Abbins
2. Louis de Monge
3. Louis de Monge
4. Eric Nessler
5. E. Dewoitine
6. G. Beuchet
7. E. Derivaux
8. Lucien Coupet
9. J. Gilbert
10. Georges Groux
11. J. Pimoule
12. Max Massy
13. Jules Deshayes
14. Francis Chardon
15. Francis Chardon
16. Francis Chardon
17. Gustave Thorouss
18. Daniel Montagne
19. Usines Farman
20. Henry Grandin
21. J. Rollé
22. Maurice Rousset
23. Henry Potez
24. Georges Sablier
25. Pierre-O. Détable
26. Louis Peyret
27. Aimé Valette
28. Ettoré Bernasconi
29. Maurice Griffrath
30. Lucien Lefort
31. Pierre Alvi
32. Jean Trofin
33. Sté Louis Bréguet
34. G. L. Julien
35. Marceau Aubiet
36. Jules Caux
37. Bellanger Frères
38. Landes et Derouin
39. Aeronautical Engineering Society
40. Louis Clément
41. E. Dewoitine
42. Pierre Levasseur
43. Et. Henri Dits
44. Louis Paulhan
45. Pierre Bonnet
46. Jean Gafner
47. Usines Farman
48. Verrimst-Maneyrol
49. Charles Vercrysse

For the purpose of housing and feeding the *personnel* which will assemble there, a camp has been established, which will be known as "Camp Mouillard." It is situated about 12 miles from Clermont-Ferrand, at the foot of the Puy de Combegrasse, from which the majority of the gliding flights will be started. The competition is international, 42 machines of French design and construction being entered, while Switzerland has entered five, America one and Belgium one. Great Britain is not represented.

The Judges' Committee is composed as follows : Lieut-Col. Renard, Commandant Destrem, MM. Charles Dollfus, Riffard, Ribourt, and Capts. Philippe and Suffrin-Hebert.

ROYAL AERONAUTICAL SOCIETY NOTICES

Silver Medal.—At a Council Meeting, held on July 18, it was decided to award the Society's Silver Medal for 1921 to Mr. H. R. Ricardo, for his paper entitled "Some Possible Lines of Development in Aircraft Engines." The Silver Medal will, in future, be awarded annually to the author of the paper which is, in the opinion of the Council, the best paper of those published in the *Aeronautical Journal* each year.

Usborne Memorial Fund.—It is regretted that the subscription of 25 guineas towards this Fund from Sir Trevor Dawson was inadvertently credited to the Pilcher Memorial Prize for Students. This increases the total of the Usborne Fund to £99 14*s.*, and involves a corresponding decrease in the Pilcher Prize to a total of £111.

W. LOCKWOOD MARSH, *Secretary*

One Million Kilometres of Air Travel.

THE K.L.M. (Royal Dutch Air Service Co.) inform us that on July 22, they commemorated the completion of one million kilometres of air travel flown under their direction. Included in this figure are the journeys made by the French lines which were co-operating with the K.L.M. The particulars of the distances flown on the various routes since the commencement in 1920 are as follows :— During 1920, 270,000 kiloms. During 1921 : Amsterdam-London and return, 285,200 kiloms; Amsterdam-Hamburg and return, 131,200; Amsterdam-Paris and return, 161,000; Special flights estimated, 24,000.

January 1 to July 10, 1922 : Regular air lines, 122,000 kiloms.; special flights, 6,600 kiloms. Total, 1,000,000 kiloms.

Here and in France

AT the annual meeting of Vickers, Ltd., last week, Mr. Douglas Vickers, who attended, made a few significant remarks upon our Government's encouragement of aircraft constructors, when compared with the authorities of our French allies. Mr. Vickers said that the firm were getting their share of such aeroplane orders as were being placed, and their types of machines were very successful, but orders came for such small quantities that the cost of designing and experiments bore much too high a proportion to the works' cost of a machine. The position of an aeroplane manufacturer here contrasted very unfavourably with that of the French manufacturer, who got orders for large series of machines, and worked, therefore, with much reduced charges and all the advantages of repetition work.

Newspapers by Air

BEGINNING as from Saturday last the Daimler Airways now carry the early morning newspapers to Paris. They were unfortunate on Saturday in the weather conditions, which prevented them getting away before 8.30 a.m., but, as the other newspaper machine run by the Messageries Aeriennes did not go at all—its papers travelling by boat and train—they scored a distinct success.

New Swiss Air Lines

ACCORDING to the Geneva correspondent of *The Times* the Compagnie des Messageries Aériennes, which has obtained the concession from the French Government, will start its Lyons-Geneva air service at the beginning of August.

On July 28 the Paris-Lausanne air service was extended to Geneva, and a daily service Paris-Lausanne-Geneva and *vice versa* established.

Air Mails Up-to-Date

THE despatch of letter mails by morning air service to Brussels, which was suspended recently, was resumed last Monday.

Full details of the Air Mail services now in operation are contained in a leaflet which has been issued by the General Post Office. Copies of the leaflet—"Air Mail"—may be obtained, free of charge, on application at the counter of head and branch Post Offices in London and the provinces.

SOCIETY OF MODEL AERONAUTICAL ENGINEERS
(The London Aero-Models Association.)

THE Society has received permission from the London County Council for members to fly model aeroplanes on the following open spaces subject to their complying with any instructions which the head keepers may consider necessary to issue:—

Blackheath, —Before 10 a.m.
Parliament Hill, Hampstead.—Saturday and Sunday mornings. Morning and afternoon other days.
Battersea Park, Civil Service Ground.—Before 10 a.m. (Saturdays excepted).
Bostall Heath, "Plateau."—All times.
Brockwell Park, Herne Hill, Cricket Ground.—May to September, before 10 a.m. October 1 to April 30, all day.
Finsbury Park, Field, North of Lake.—Before 10 a.m.
Hackney Marsh:—
Summer, on Football Ground.—All day.
Winter, on Cricket Ground.—All day.
Hampstead Heath Extension.—Before 1 p.m.
Ladywell Recreation Ground, S.E.—Before 1 p.m.
Plumstead Common, on military portions.—All day.
Victoria Park, Demonstration Ground.—Before noon, weekdays. Before 9 a.m., Sundays.
Wormwood Scrubs, Centre of Big Scrubs.—Before noon.

A. E. Jones, Hon. Sec., 48, Narcissus Road, N.W. 6.

FLIGHT Challenge Cup Competition.

On Saturday last, the postponed competition for the FLIGHT Challenge Cup was held on Wimbledon Common in spite of very adverse weather conditions. Drenching rain did its utmost to damp the ardour of the competitors, in addition to saturating thoroughly and so impairing the flying capabilities of the machines.

Nearly forty members were present, and out of this number fifteen were ready to do battle for the FLIGHT Cup. Unfortunately, owing to the rain, the start had to be delayed for two hours, and during this period of waiting Mr. Green and Mr. Levy both damaged their models whilst indulging in further trial flights. This reduced the actual starters to thirteen.

The majority of the competitors had machines of the tractor type, but Mr. Burchell had a very original model of the "Old Henry Farman" type with the propeller situated between the main-plane and the tail. Some very fine flying was witnessed with this machine during the tests.

At 7.11 p.m. Mr. Bedford, flying a small tractor monoplane, weighing only 4½ ounces, got away in fine style; the model, rising from the starting-board and reaching a good height, easily accomplished the qualifying 10 seconds duration off the ground. Mr. Hersom and Mr. Aaron were the next away, both models going well, but Mr. L. G. H. Hatfull's machine, which got off at the second attempt, was carried by the strong wind in the opposite direction. Mr. Howes did not get off and fulfil the qualifying duration, whilst Mr. J. Louch's model flew well, but in a contrary direction.

The next competitor, Mr. L. Gray, had entered one of his enclosed-fuselage tractor monoplanes, and got off well at the second effort, making a good line for the first base. Mr. Rippon and Mr. Wilson were not so fortunate, and did not succeed in making the necessary duration, and so were automatically disqualified.

Mr. Whelpton was next off, but Mr. Burchell's model, after rising easily, crashed into another competitor before doing the qualifying duration, and at his second attempt the model refused to rise, due no doubt to some disarrangement caused by the crash. The last competitor away was Mr. D. A. Pavely, with his huge compressed-air driven monoplane, which made a most impressive flight.

Mr. Burchell was now allowed a further attempt, and this time his model immediately rose to a good height and made a flight of longer duration than that of any other competitor. This was very unfortunate for Mr. Burchell, as the longer the model flew the further it went from the official course, with little hope of ever flying back against the strong wind—now very bumpy.

By this time, Mr. Bedford was well on his way to the finishing base, and at 7.37 p.m. he came in, having covered the full course in 26 minutes, during which he made 22 flights—an excellent performance. Mr. Whelpton was also making steady progress, and eventually got home at 7.53 p.m. Mr. Hersom came in two minutes later, and Mr. Gray followed at 8.6 p.m.

Mr. Bedford is to be congratulated on becoming, in such convincing style, the first holder of the FLIGHT Challenge Cup.

Full Results

Mr. Bedford, 22 flights in 26 mins., winner.
Mr. Whelpton, 29 flights in 31 mins., second.
Mr. Hersom, 31 flights in 43 mins., third.
Mr. L. Gray, 37 flights in 46 mins., fourth.

Also flew:

Messrs. Aaron, Burchell, Hatfull, Holton, Howes, Louch, D. A. Pavely, Rippon and Wilson.

Judges: Messrs. A. F. Houlberg and A. B. Clark.

PUBLICATIONS RECEIVED

Directorate of Civil Aviation: Half-Yearly Report on the Progress of Civil Aviation (October 1, 1921–March 31, 1922). London: H.M. Stationery Office, Kingsway, W.C. 2. Price 6*d.* net.

Official Gazette of the United States Patent Office: July 4, 1922. *Vol.* 300, *No.* 1. U.S. Government Printing Office, Washington, D.C., U.S.A.

Canadian Patent Office Record and Register of Copyrights and Trade Marks. Vol. L, No. 27. *July*, 4, 1922. Patent and Copyright Office, Ottawa, Canada. Price 10 cents.

Reports and Memoranda, Aeronautical Research Committee:—

No. 728.—*An Investigation of the Aerodynamic Properties of Wing Ailerons. Part IV: The Effect of Yaw on Balance of Ailerons of the "Horn" Type.* By H. B. Irving, B.Sc., and A. S. Batson, B.Sc. With Notes on Balanced Ailerons of the "Horn" Type, by Capt. G. T. R. Hill, M.C., B.Sc. Sept., 1920. Price 1*s.* net; by post, 1*s.* 1½*d.*

No. 752. *Some Applications of the Vortex Theory of Aerofoils.* By H. Glauert. May 1921. Price 9*d.* net. By post 10*d.*

No. 757. *The Effect of Rate of Loading on the Apparent Strength of Cotton Balloon Fabric.* By G. Barr, B.A., D.Sc. December, 1920. Price 4*d.* net; by post 4½*d.*

No. 758 (*M.* 9).—*Report on the Viscosity of Acetyl Cellulose Solutions.* By C. Visser, B.Sc. Aug., 1920. Price 6*d.* net; by post, 6½*d.*

No. 763 (*Ae.* 24). *Lift and Drag of B.E.2E with R.A.F.* 19 *Wings; Comparison of Full Scale and Model Results.* By H. M. Garner and F. B. Bradfield. August, 1921. London: H.M. Stationery Office, Kingsway, W.C. 2. Price 1*s.* net; by post 1*s.* 1*d.*

NEW COMPANY REGISTERED

AIR ADS, LTD., was registered as a private company on July 18, with a nominal capital of £1,000 in £1 shares. The objects are:—To carry on the business of advertisement contractors, and especially (but not exclusively) to display advertisements in the sky by means of writing with smoke, powder or other substance, or liquid emitted from aeroplanes or other aerial craft, etc.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors
The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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